**Rabies Virus (rabies encephalitis)**

**Signs/Symptoms:** Visual hallucinations, malaise, back pain, muscle pain, vomiting, hyperesthesia, being agitated, hydrophobia, hypersalivation, **wide fluctuations in body temperature and blood pressure**. Convulsions are later, and coma is the final stage.

**Ddx:** Arboviral encephalitis, Guillain-Barre, Herpes 1, Lyme, Polio, Rabies. Altered consciousness is the sine qua non of encephalitis in the setting of other signs of infection, such as fever, headache and neuro signs. **The findings of agitation and hydrophobia are specific for rabies. Without hydrophobia and agitation, hard to distinguish between the others.**

**Identification:**  DFA staining of nuchal skin biopsy, RT-PCR of CSF/saliva/nuchal skin, viral serology; identification of **Negri bodies** (intracytoplasmic mass of fibrillar matrix and rabies virus particles) in neurons. Bullet shaped nucleocapsid (Rhabdovirus: negative ssRNA), with knob-like glycoproteins on the envelope.

**Source/Epidemiology:** Animal bite. There are two forms, urban and sylvatic, transmitted by dogs (or other communal animals) and bats, respectively. Person-to-person spread is possible via saliva or aerosolized froth. Can also be transmitted in organs. Not spread hematologically, but through nervous tissue.

**Pathology:** Incubation period of 3 to 8 weeks on average, with as short as 9 days and as much as 7 years. **Depends on infection site distance from the brain**. **Virus buds from cells but does not lyse them**. Progeny infect sensory neurons in the PNS. Viral glycoproteins bind to acetycholine receptors, contributing to neurovirulence of the rabies virus. Moves back towards the CNS, and **once in the brain, replicates exclusively within the gray matter**. Travels back down the peripheral nerves and to the **salivary glands** and other tissues (lungs, kidney, and skin). ***Secondary viral replication in mucinogenic acinar cells of salivary glands facilitates secondary transmission via saliva***. Look for negri bodies. Virus-specific cytotoxic T cells, induced by the viral glycoprotein, kill the virus-infected neurons, causing brain damage and encephalitis. **100% fatal, death is due to respiratory failure, need post-exposure vaccination for survival**. Hydrophobia= due to painful spasms of the swallowing muscles leads to avoidance of water.

**Resistance/Susceptibility:** Everyone around animals in places where rabies is.

**Prevention/Treatment:** No treatment. HDCV Vaccine (inactivated) is available for those at high risk only. A 3 step post-exposure prophylaxis is available (clean wound with soap and water, passive immunization with Ig (rabies antiserum or human Ig), active immunization with **HDCV vaccine**).